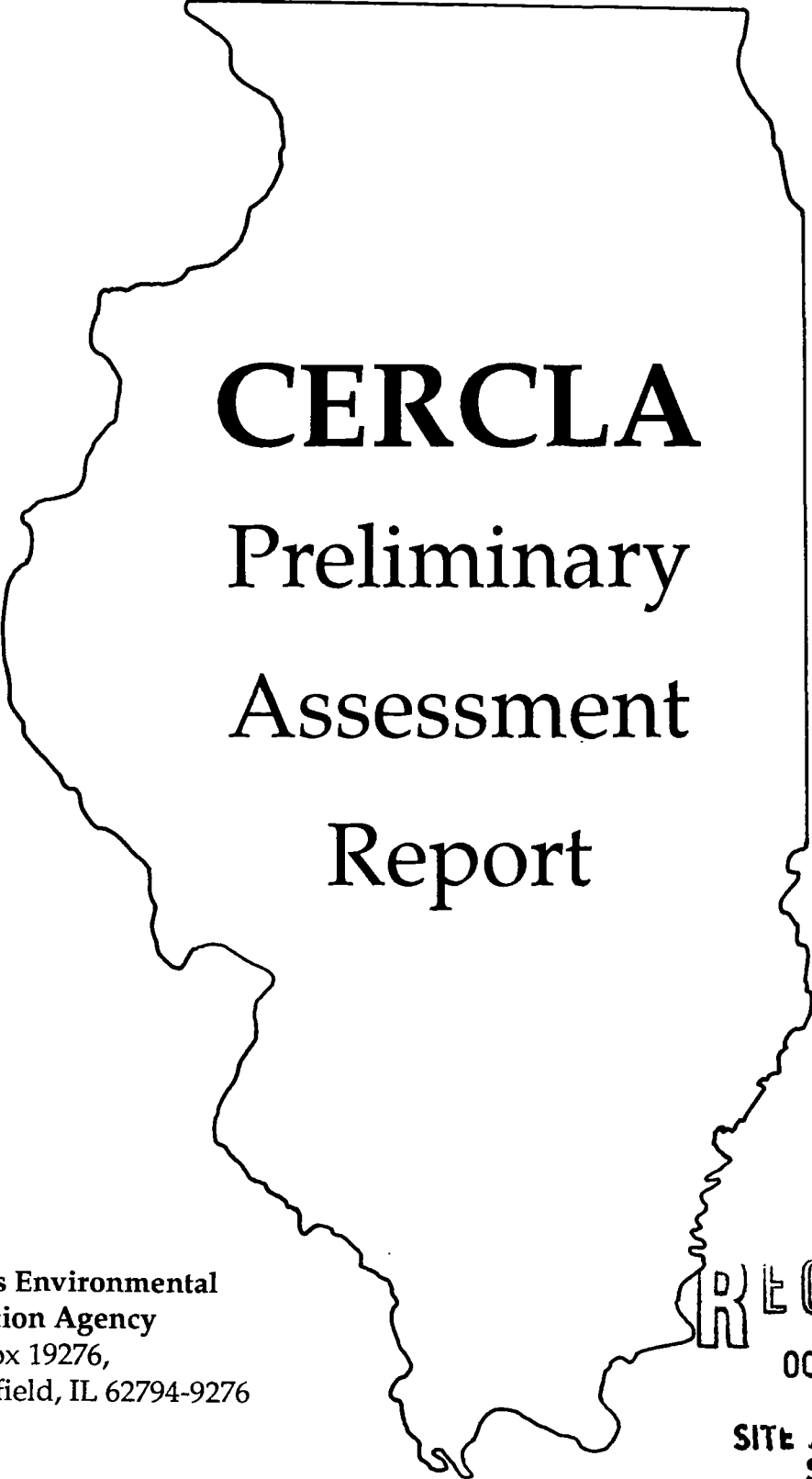


Drum Disposal Area
Cook County
ILD 984791681
SF/HRS



CERCLA Preliminary Assessment Report



Illinois Environmental
Protection Agency
P.O. Box 19276,
Springfield, IL 62794-9276

RECEIVED
OCT - 1 1991

**SITE ASSESSMENT
SECTION**

EPA Region 5 Records Ctr.



311365

Confidential Material May be Enclosed

CERCLA Preliminary Assessment Report
for
Drum Disposal Area
ILD984791681

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SECTION 1
EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Drum Disposal Area was placed on the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) August 29, 1990 as a result of a request made by the Illinois Environmental Protection Agency. This request was the result of information received from officials of the Village of Orland Park concerning leaking barrels at the site. The site is also listed on CERCLIS under the name Southwest Highway Drums.

The Drum Disposal Area is located approximately one mile southwest of the Village of Orland Park at the northeast corner of Southwest Highway and 179th Street in Cook County, Illinois. Traditionally a rural setting, this area has more recently started undergoing development as more residential and commercial sites have moved into the area. The site is currently bordered to the north/north-west by Southwest Highway (U.S. Route 6) beyond which lies a recently developed residential area. To the west of the site lies a cornfield, and to the south is 179th Street beyond which lies a transportation project under development. The site is bordered to the east by Marley Creek and the Norfolk and Western Railroad.

According to records at the Orland Township Assessor's Office, the site is currently owned by Prairie Material

Sales, Incorporated, a concrete foundry company in Bridgeview, Illinois. According to Jerry Krozel of Prairie Material Sales, Incorporated, the company purchased the property in the mid-1970's. A 1972 plat map shows the site belonging to S.M. Shively. Local residents state the property has remained vacant for many years. A 1965 aerial photograph indicates the site was vacant at that time, but later photographs (1976, 1988) show filling activity at the site. According to information received from U.S. Environmental Protection Agency records, the site consisted of construction and demolition fill and contained several large, empty concrete batch tanks, along with drums.

Illinois Environmental Protection Agency records indicate that the IEPA became involved with the site in June of 1989 when a complaint was received from an official of the Orland Park Planning Department. According to the complainant, drums were being disposed of in a wetland area, and some drums were leaking a "melted gum"-like material.

The U.S. Environmental Protection Agency became involved with the site in May of 1989 when that agency received a complaint alleging that illegal dumping and filling of wetlands were occurring at the site. During investigation of the complaint by U.S. EPA's Emergency Response Section and the Technical Assistance Team, approximately 42 rusted, leaking drums were discovered on-site. Also found on-site were five empty 10,000

to 15,000 gallon tanks, four empty 500 to 1000 gallon tanks and scrap metal. Some partially buried drums were also found on-site. At this time samples were collected from five of the drums and from stained surface soil. Analytical results of the samples showed two of the drum samples to be ignitable. Soil samples revealed the presence of acetone at 2700 parts per million (ppm), methyl ethyl ketone at 13,000 ppm, toluene at 14,000 ppm and total xylenes at 4,700 ppm.

Following these discoveries an Administrative Order by Consent was prepared by USEPA, in which Prairie Material Sales agreed to undertake and complete emergency removal activities at the site. In August of 1989 the USEPA tasked the Technical Assistance Team (Weston - Major Programs Division) to monitor the removal action.

According to a letter from Weston to USEPA, removal activities began at the site June 17, 1989. During removal, drums were sampled, overpacked and removed. Soil was excavated from the drum area and a composite soil sample was collected. The analytical results of this sample are shown below.

methylene chloride	462	ppb
acetone	4010	ppb
2-butanone	262(J)	ppb
toluene	3500	ppb
xylene (total)	1060	ppb

(J = estimated value)

In October of 1990 approximately 20 more cubic yards of soil was excavated in the drum area. As excavation continued, air monitoring readings continued to rise, indicating further contamination. To determine the vertical and horizontal extent of contamination, test-pits were excavated and four monitor wells were installed. Samples collected at this time revealed that the remaining soil was still contaminated and one groundwater sample showed the presence of benzene at 55 parts per billion (ppb).

Currently, the U.S. Environmental Protection Agency, together with the Illinois Environmental Protection Agency, is reviewing a work plan submitted by Prairie Environmental Specialists to undertake further remedial action at the site. According to Tom Mangan, President of Prairie Environmental Specialists, the proposed plan calls for a soil vapor extraction system and a groundwater pump-and-treat system to be installed at the site.

On July 23, 1991, Judy Triller and Kim Nika of the Illinois Environmental Protection Agency conducted a site reconnaissance of the Drum Disposal Area. At this time the site was found to be vacant and easily accessible as it was not enclosed by a fence. Most of the site was found to consist of open area covered with gravel and sparse

vegetation. The borders of the site contained more brush, trees, and grass. Several large rusty tanks and various pieces of equipment were noted in the northwestern part of the site. Also in this part of the site was the former drum area and area of excavated soil. This area was surrounded by a fallen snow fence and several monitor wells. Concrete blocks and a cable prevented vehicles from entering the site from Southwest Highway.

Information obtained from area well logs and the Illinois State Geological Survey publication, Groundwater Possibilities in Northeastern Illinois, indicates that the geology of the area consists of alternating layers of sand/gravel and clay to depths ranging from 125 feet to over 200 feet. Underlying these glacial deposits are bedrock formations of dolomite, shale and sandstone. At the site itself, surface material consists of fill material composed of demolition and construction debris. According to U.S. Environmental Protection Agency records, during soil excavation at the site groundwater was encountered at approximately 12 feet.

The dolomite aquifer is the main source of drinking water in the vicinity of the site. According to Illinois Environmental Protection Agency Division of Public Water Supplies' facility inventory there are five public wells located within four miles of the site. Two of the wells are located approximately

2.6 miles from the site and supply water to the village of Mokena. These wells draw water from the dolomite aquifer at depths from 90 feet to 420 feet and serve a population of approximately 5000.

The Metro Utility Company - Chickasaw Hills Division owns a well located approximately 2.7 miles northwest of the site. According to Robert Linenberger, General Manager of Metro Utility Co., this well (known as well 3) is one of a system of four wells that serves unincorporated areas of eastern Homer Township. This well draws water from the dolomite aquifer at depths of 155 feet to 300 feet. The four-well system serves approximately 8250 people.

The other two wells located within four miles of the site are owned by Citizens Utility. These wells are known as well 1 and well 2 and are located approximately 3.5 miles southeast of the site. According to Marvin Strong, Operations Manager for Citizens Utility, they serve the unincorporated area known as Arbury Hills and the industrial park of the Village of Mokena. Both wells draw water from the dolomite aquifer - well 1 draws water from depths of 121 feet to 457 feet while well 2 draws water from depths of 117 feet to 435 feet.

Others residing within four miles of the site obtain drinking water from Lake Michigan, from wells located more than four miles from the site, or from private wells. Well logs from

the area indicate that the majority of private wells in the area draw water from the dolomite aquifer. It is estimated that approximately 14,300 people obtain water from sources located within four miles of the site.

Surface water runoff from the site enters Marley Creek, which is located northeast and east of the site. Marley Creek flows southwest for approximately 4.5 miles at which point it converges with Hickory Creek. The surface water route continues along Hickory Creek, flowing east and south for approximately 10 miles where it enters the Des Plaines River (at Joliet). The remainder of the surface water route continues along the Des Plaines River for approximately 0.5 miles. There are no known surface water drinking water intakes within 15 miles downstream of the site. According to U.S. Fish and Wildlife Service National Wetlands Inventory maps, a small wetland area is located on the Prairie Material Sales property northeast of the actual drum area. This area may be located in the overland runoff route. Approximately 3.75 miles of wetland frontage exist along Marley Creek (flow estimated to be approximately 10 cubic feet per second) downstream of the site. Information obtained from the Illinois Department of Conservation indicates that Hickory Creek is considered a moderate fishery resource.

No on-going air emission problems are known to exist at the site. However, as state previously, air monitoring readings

rose above background during excavation of soil from the drum area. Furthermore, the National Wetlands Inventory map shows approximately 30 acres of wetlands within 0.5 miles of the site.

The presence of contaminated soil at the site leads to the possibility of a direct contact hazard. The site is easily accessible and although the area is not heavily populated, a residential area is located just northwest of the site. As stated earlier, concrete blocks and a cable prevent vehicles from entering the site.

Based on information known about the facility and surrounding area at this time, two primary targets associated with the surface water path have been identified - Marley Creek and wetlands associated with the overland runoff route. Other concerns at the site include the presence of contaminants in shallow groundwater and the potential for direct contact with contaminated soil. Also to be considered is the fact that remedial work has been carried out at the site and currently plans for additional remedial work are underway.

Due to these factors a low priority status has been assigned to the Drum Disposal Area site. It is recommended that the Region V Offices of the U.S. Environmental Protection Agency advance this site to the Screening Site Inspection stage of the CERCLA Pre-Remedial process.

BIBLIOGRAPHY

Bergstrom, R.E.; Foster, J.W.; Selkregg, Lidia F.; and Pryor, W.A. Groundwater Possibilities in Northeastern Illinois, 1955.

Buchler, Bob. Water Operator, Village of Mokena. September 10, 1991 telephone interview.

Hack, Larry. Water Operator, Village of Orland Park. September 25, 1991 telephone interview.

Illinois Department of Conservation, Impact Analysis Section, Division of Planning. August 8, 1991 letter.

Illinois Environmental Protection Agency, Division of Land Pollution Control files for Prairie Material Sales.

Illinois Environmental Protection Agency, Division of Public Water Supplies. Facility Inventory.

Illinois State Water Survey. Well logs from the area.

Mangan, Tom. President, Prairie Environmental Specialists. September 18, 1991 telephone interview.

Strong, Marvin. Operations Manager, Citizens Utility. September 17, 1991 telephone interview.

U.S. Environmental Protection Agency, Emergency Response Section files for Southwest Highway Drums.

Zentak, Leonard. U.S.EPA. September 26, 1991 telephone interview.

SECTION 2

EPA FORM 2070-12

"Potential Hazardous Waste Site
Preliminary Assessment"



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
IL D984791681

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) Drum Disposal Area *		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 179th St. + Southwest Hwy.				
03 CITY Orland Park		04 STATE IL	05 ZIP CODE 60462	06 COUNTY Cook	07 COUNTY CODE 031	08 CONG DIST 3
09 COORDINATES LATITUDE 41 33 51.2		LONGITUDE 081 54 00.2				

10 DIRECTIONS TO SITE (Starting from nearest public road)
In Orland Park follow Rt. 6 west/south. The site is located at the northeast corner of Route 6 and 179th Street.

III. RESPONSIBLE PARTIES

01 OWNER (if known) Prairie Material Sales, Inc.		02 STREET (Business, mailing, residential) 7101 West 79th Street				
03 CITY Bridgeview		04 STATE IL	05 ZIP CODE 60455	06 TELEPHONE NUMBER 1708 458-0400		
07 OPERATOR (if known and different from owner) Same As Above		08 STREET (Business, mailing, residential)				
09 CITY		10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER ()		

13 TYPE OF OWNERSHIP (Check one)

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: ____/____/____ ☐ B. UNCONTROLLED WASTE SITE (RCRA 102) DATE RECEIVED: ____/____/____ ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE 5, 1989 <input type="checkbox"/> NO		BY (Check all that apply) <input checked="" type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER: _____ (Specify) CONTRACTOR NAME(S): _____			
02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION BEGINNING YEAR _____ ENDING YEAR _____ <input type="checkbox"/> UNKNOWN			

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Solvents - Methylene Chloride, Acetone, 2-butanone
toluene, xylene

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Soil Contamination
Groundwater Contamination
Surface Water Contamination

V. PRIORITY ASSESSMENT

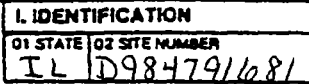
01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Inspections)
☐ A. HIGH (Inspection required priority) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspection on any available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT Tom Mangan		02 OFF (Agency/Organization) Prairie Environ. Specialists		03 TELEPHONE NUMBER (708) 293-4441	
04 PERSON RESPONSIBLE FOR ASSESSMENT Judy J. Triller		05 AGENCY IEPA	06 ORGANIZATION DLPC/RM	07 TELEPHONE NUMBER 1211 782-6760	08 DATE 9, 27, 91 MONTH DAY YEAR

EPA FORM 2070-12 (7-81)

* Also Known as Southwest Highway Drums



<p>01 PHYSICAL STATES - Check all that apply</p> <p><input checked="" type="checkbox"/> A SOLID <input type="checkbox"/> B POWDER, FINES <input type="checkbox"/> C SLUDGE</p> <p><input type="checkbox"/> E SLURRY <input type="checkbox"/> F LIQUID <input type="checkbox"/> G GAS</p> <p><input type="checkbox"/> D OTHER _____ <small>(Specify)</small></p>	<p>02 WASTE QUANTITY AT SITE <small>(Measurements of waste boundaries must be put in parentheses)</small></p> <p>TONS _____</p> <p>CUBIC YARDS _____</p> <p>NO OF DRUMS _____</p> <p style="text-align: center; font-size: 1.5em;">Unknown</p>	<p>03 WASTE CHARACTERISTICS - Check all that apply</p> <p><input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT</p> <p><input type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input type="checkbox"/> G FLAMMABLE <input checked="" type="checkbox"/> H IGNITABLE</p> <p><input type="checkbox"/> I HIGHLY VOLATILE <input type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE</p>
--	--	---

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS	110 known		
PSO	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

[illegible]

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

IEPA Division of Land Pollution Control Files (Prairie Material Sales)
U.S. EPA Emergency Response Section Files (Southwest Hwy. Drums)



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

1. IDENTIFICATION

01 STATE 02 SITE NUMBER
IL D984791681

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 <input checked="" type="checkbox"/> A GROUNDWATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED <u>14300</u>	02 <input checked="" type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION The presence of contaminants in on-site soil, together with shallow groundwater lead to the possibility of groundwater contamination. One groundwater sampled showed benzene at approx. 50ppb.	<input checked="" type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> B SURFACE WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED <u> </u>	02 <input type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION The presence of contaminants in on-site soil, together with the proximity of surface water leads to the possibility of surface water contamination. - Marley Creek.	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> C CONTAMINATION OF AIR 03 POPULATION POTENTIALLY AFFECTED: <u> </u>	02 <input type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION None Known	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> D FIRE/EXPLOSIVE CONDITIONS 03 POPULATION POTENTIALLY AFFECTED <u> </u>	02 <input type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION In the fall of 1989 samples were collected from drums at the site + found to be ignitable. These drums were removed from the site, but soil at the site is still contaminated from leaking drums.	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> E. DIRECT CONTACT 03 POPULATION POTENTIALLY AFFECTED: <u> </u>	02 <input type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION The presence of contaminated soil at the site leads to the possibility of a direct contact hazard.	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> F. CONTAMINATION OF SOIL 03 AREA POTENTIALLY AFFECTED: <u>5-11</u> <small>(ACROSS)</small>	02 <input checked="" type="checkbox"/> OBSERVED (DATE <u>6-17-89</u>) 04 NARRATIVE DESCRIPTION Soil samples at the site were found to contain various solvents.	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> G DRINKING WATER CONTAMINATION 03 POPULATION POTENTIALLY AFFECTED <u>14300</u>	02 <input type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION Traces of benzene were detected in groundwater (shallow) at the site. Some nearby residents utilize groundwater for drinking.	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> H. WORKER EXPOSURE/INJURY 03 WORKERS POTENTIALLY AFFECTED: <u> </u>	02 <input type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION None Known - Site currently inactive	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED
01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY 03 POPULATION POTENTIALLY AFFECTED: <u> </u>	02 <input type="checkbox"/> OBSERVED (DATE <u> </u>) 04 NARRATIVE DESCRIPTION None Known	<input type="checkbox"/> POTENTIAL <input type="checkbox"/> ALLEGED



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	D98479/681

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION
Wetlands are located northwest of former drum area. Contaminants in the soil could possibly be carried to this area by surface runoff.

01 ☒ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION (Specify number of species)
See "J" above. Also, if contaminants were carried to nearby surface water, aquatic life of the stream could be affected.

01 ☒ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION
See "K" above

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES 02 ☒ OBSERVED (DATE: 1989) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Leaking drums at the site resulted in soil contamination.

01 ☐ N. DAMAGE TO OFF-SITE PROPERTY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION
None Known

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION
None Known.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING 02 ☒ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION
The site is a vacant lot in a rural area where unauthorized dumping was known to be a problem.

06 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 14300

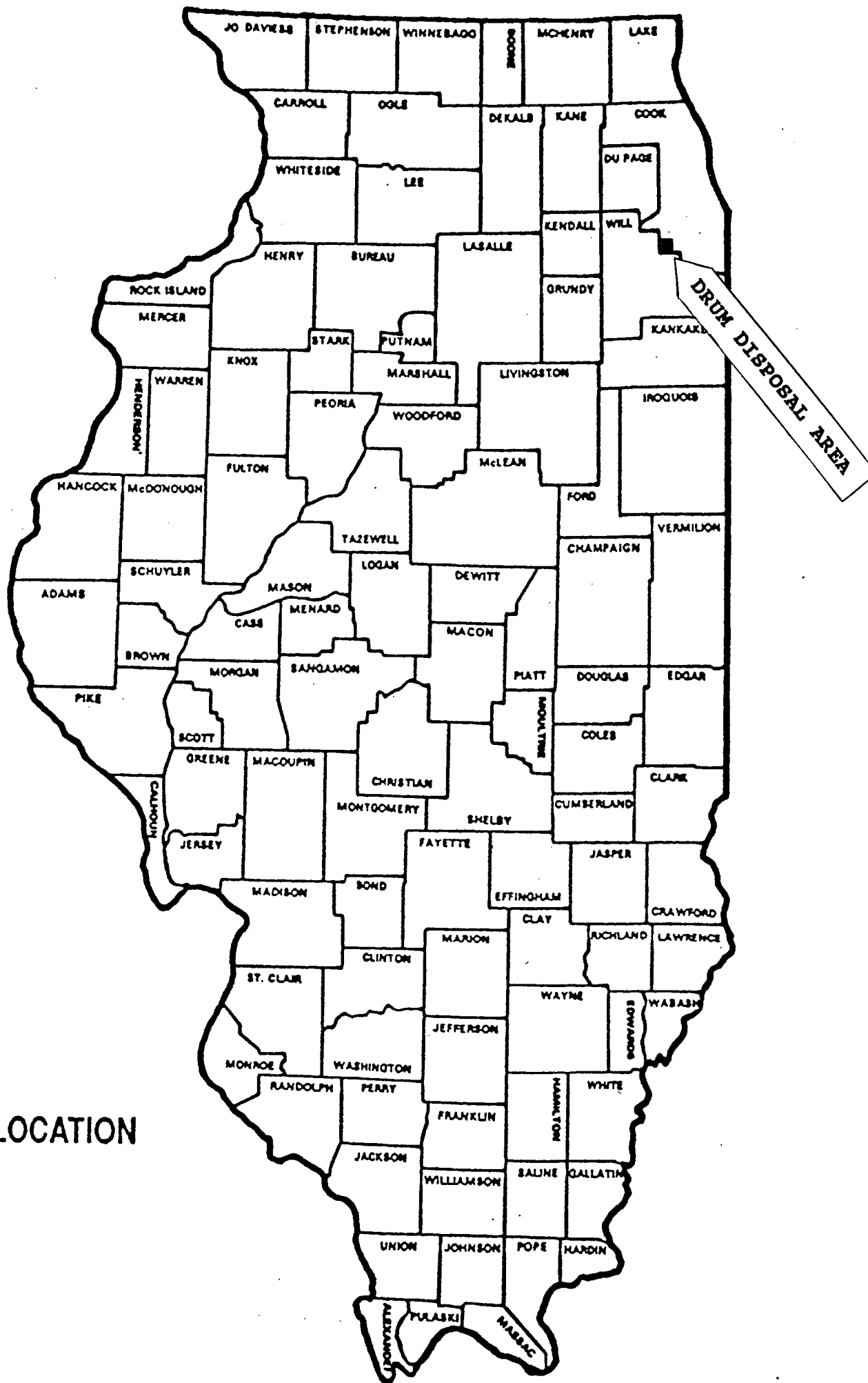
IV. COMMENTS

Leaking drums at the site were left by an unknown party. The drums have been removed + some contaminated soil has been excavated. Plans for further remediation activities are underway.

V. SOURCES OF INFORMATION (For example: references, e.g., state files, airport analysis, reports)

IEPA Division of Land Pollution Control files (Prairie Material Sales)
U.S. EPA Emergency Response Section files (Southwest Hwy Drums)

SECTION 3
MAPS



SITE LOCATION

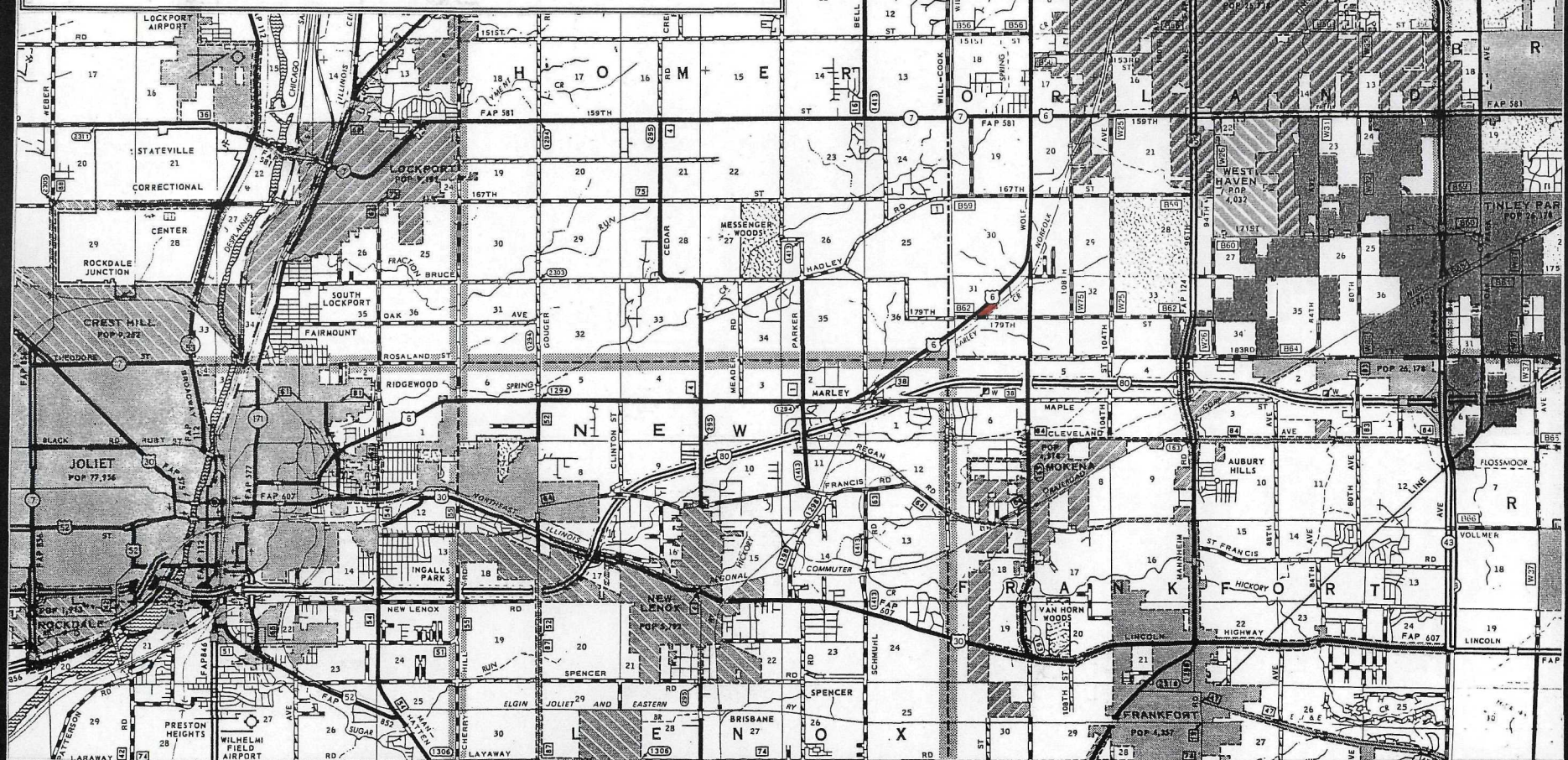
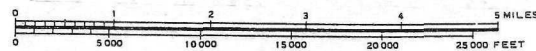
Illinois Environmental
Protection Agency

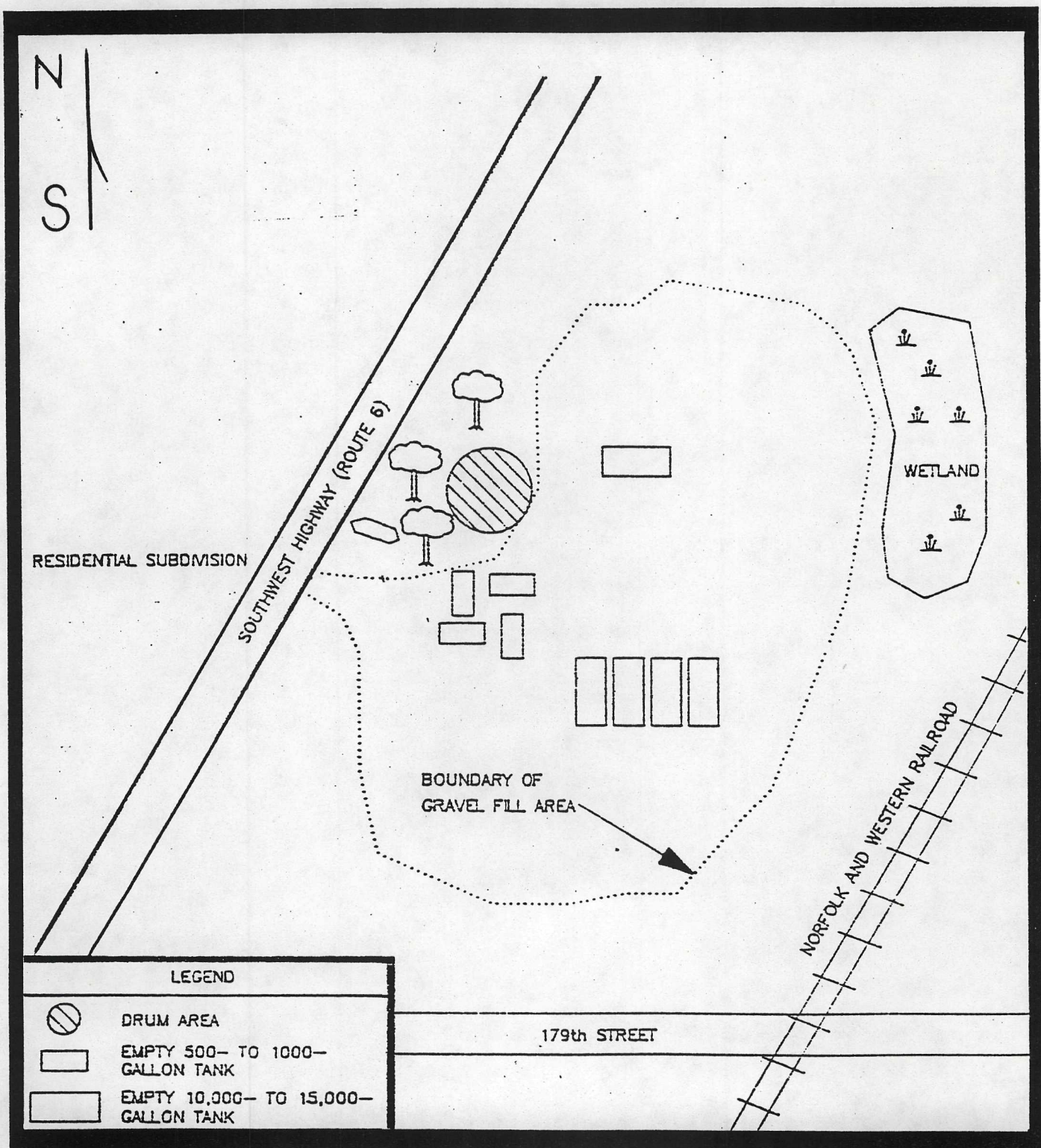
Site: Drum Disposal Area
ILD: 984791681

Vicinity Map

Legend:  Site Location

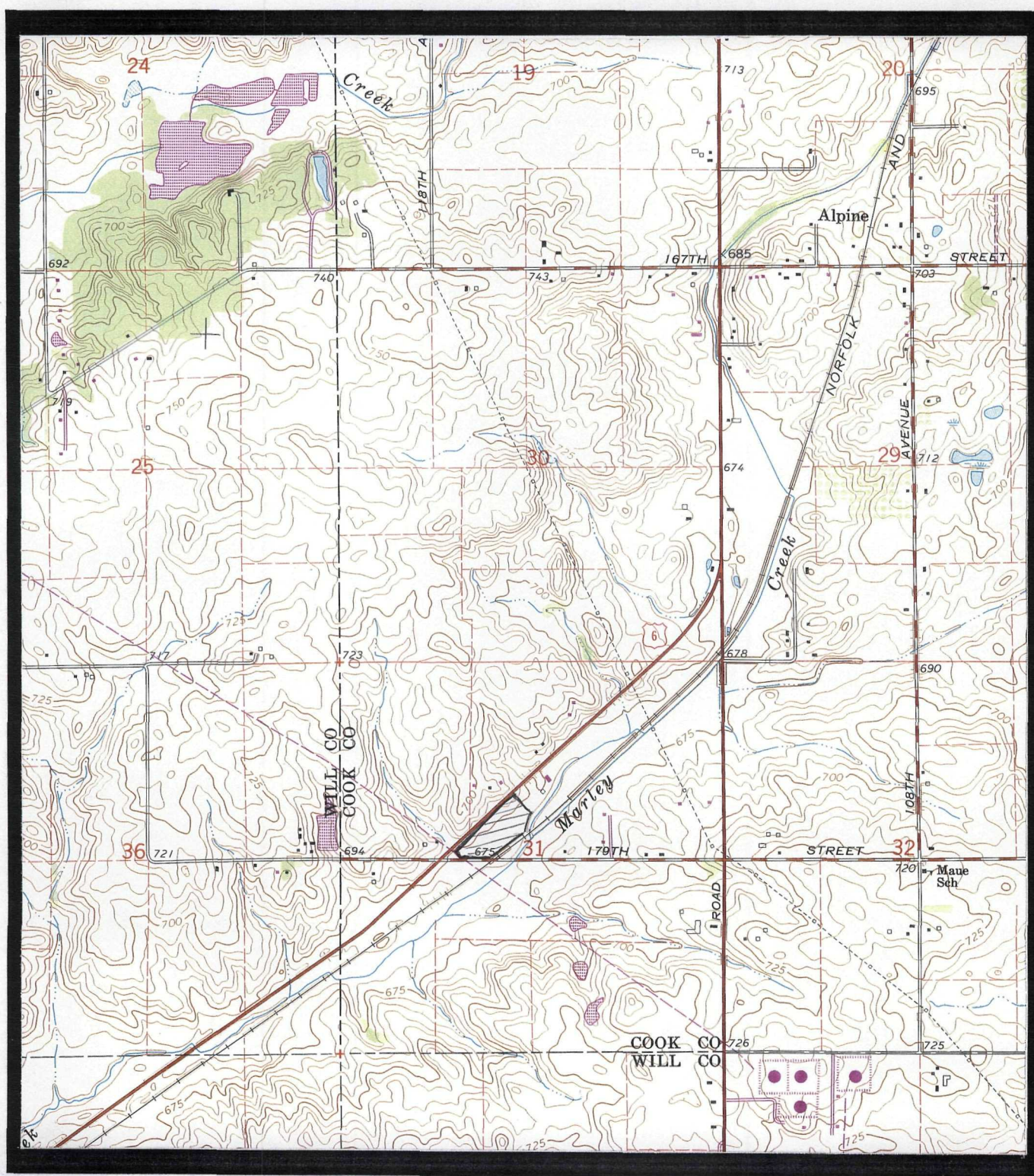
Scale





Base Map: Weston Major Programs Division, 10-24-90.

DRUM DISPOSAL AREA Site Map



Base Map: USGS 7.5 Minute, 1963 Mokena Quadrangle; photorevised 1973.

DRUM DISPOSAL AREA Site Topography

SECTION 4
PHOTOGRAPHS



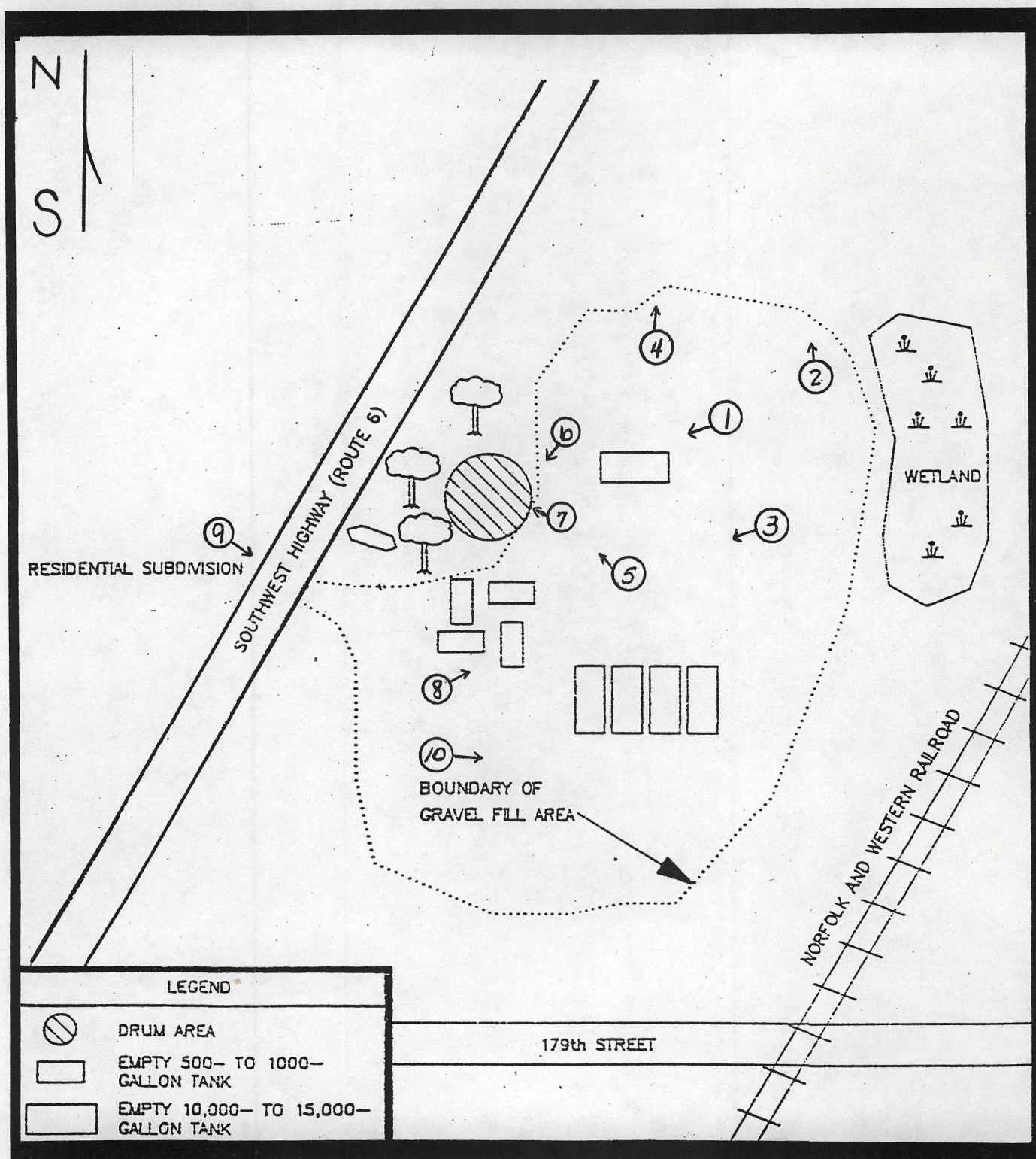
1965 Aerial Photo provided by Illinois Dept. of Transportation.

DRUM DISPOSAL AREA
Orland Park, Cook Co. Illinois



1988 Aerial Photo provided by Illinois Dept. of Transportation.

DRUM DISPOSAL AREA
Orland Park, Cook Co. Illinois



DRUM DISPOSAL AREA
PHOTOGRAPH LOCATION MAP

DATE: JULY 23, 1991

TIME: 10:15 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER: 1

LOCATION: ILD984791681
DRUM DISPOSAL AREA

EMPTY TANK ON-SITE
NEAR DRUM AREA.



DATE: JULY 23, 1991

TIME: 10:20 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 2

LOCATION: ILD984791681
DRUM DISPOSAL AREA

REMNAINT OF DRUM
ON-SITE.



DATE: JULY 23, 1991

TIME: 10:20 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 3

LOCATION: ILD984791681
DRUM DISPOSAL AREA

EMPTY TANKS AND
EQUIPMENT ON-SITE.



DATE: JULY 23, 1991

TIME: 10:25 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 4

LOCATION: ILD984791681
DRUM DISPOSAL AREA

EMPTY RUSTED DRUMS
AND MONITOR WELL



DATE: JULY 23, 1991

TIME: 10:25 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 5

LOCATION: ILD984791681
DRUM DISPOSAL AREA

RUSTED DRUM ON-SITE



DATE: JULY 23, 1991

TIME: 10:30 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 6

LOCATION: ILD 984791681
DRUM DISPOSAL AREA

FORMER LOCATION OF DRUMS
AND AREA OF EXCAVATED
SOIL.



DATE: JULY 23, 1991

TIME: 10:30 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 7

LOCATION: ILD984791681
DRUM DISPOSAL AREA

AREA OF EXCAVATED SOIL.



DATE: JULY 23, 1991

TIME: 10:35 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 8

LOCATION: ILD984791681
DRUM DISPOSAL AREA

RUSTED TANKS AND
EQUIPMENT.



DATE: JULY 23, 1991

TIME: 10:40 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 9

LOCATION: ILD984791681
DRUM DISPOSAL AREA

VIEW FROM SOUTHWEST
HIGHWAY. CONCRETE BLOCKS
AND CABLE BLOCKING
ENTRANCE ONTO SITE.



DATE: JULY 23, 1991

TIME: 10:45 AM

PHOTOGRAPH TAKEN BY:
KIM NIKA

PHOTO NUMBER 10

LOCATION: ILD984791681
DRUM DISPOSAL AREA

AREA NEAR ACCESS ROAD



SECTION 5
SUPPORTING DOCUMENTATION
AND REFERENCES

REFERENCES

1. November 7, 1990 letter from Roy F. Weston, Inc. to U.S.EPA with information concerning southwest highway Drum site.
2. September 10, 1991 Telephone conversation Record with Bob Buchler, Water Operator, Village of Mokena.
3. September 17, 1991 Telephone Conversation Record with Marvin Strong, Operations Manager, Citizens Utility.
4. September 18, 1991 Telephone conversation Record with Tom Mangan, President, Prairie Environmental Specialists.
5. September 25, 1991 Telephone conversation Record with Larry Hack, Water operator, Orland Park.
6. September 26, 1991 telephone conversation Record with Leonard Zentak of U.S.EPA.
7. Excerpt from Illinois State Geological Survey publication, Groundwater Possibilities in Northeastern Illinois, 1955.
8. Well logs from the area obtained through Illinois State Water Survey.

REFERENCE 1



River Center, 141 North Canal Street, 8th Floor, Suite 855,
Chicago, IL 60606 • (312) 993-1067 • FAX 312 993-0226

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

Mr. Duane Heaton
Deputy Project Officer
Emergency Response Section, 5HS - 12
U.S. Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604

November 7, 1990

TAT-05-G2-02258

Re: Southwest Highway, Orland Park, Illinois
TDD# 5-9010-03

Dear Mr. Heaton:

On August 8, 1989, the U.S. Environmental Protection Agency, (U.S. EPA) tasked the Technical Assistance Team (TAT) to monitor the potentially responsible party (PRP) removal action at the Southwest Highway Drum/Prairie Materials (SW Highway) site in Orland Park, Cook County, Illinois (Figure 1). The five-acre site, which is owned by Prairie Materials, (a concrete foundry company), consists of construction and demolition fill, and contained, prior to the start of the PRP removal action, several large, empty concrete batch tanks and a number of drums. The site is bordered by a wetland to the northeast, the Norfolk and Western Railroad to the east, 179th Street to the south, and Southwest Highway (Route 6) to the west (Figure 2).

Prompted by a resident complaint of illegal dumping and filling of wetlands, the U.S. EPA and TAT performed a site assessment (TDD# 5-8905-23) on May 30, 1989. TAT observed five empty 10,000- to 15,000-gallon tanks, four empty 500- to 1,000-gallon tanks, and approximately 42 rusted 55-gallon drums, some of which indicated signs of previous leakage. TAT collected samples from five of the drums and from an area of stained soil. Results of analyses performed on the samples indicated Resource Conservation and Recovery Act (RCRA) ignitability characteristics in the drummed material and solvent contamination in the soil. To alleviate the on-site hazards, the U.S. EPA requested the PRP fund a removal action.

PRP removal efforts began on June 17, 1989, when snow fencing and signs were installed around the drum area. On August 9, 1989, representatives from ATEC Associates, Inc. (ATEC) were mobilized to the site to conduct drum and soil sampling for disposal acceptance. One composite soil and 38 drum samples were collected and analyzed by ATEC.

Roy F. Weston, Inc.

MAJOR PROGRAMS DIVISION

In Association with ICF Technology, Inc., C.C. Johnson & Malhotra, P.C., Resource Applications, Inc.,
and R.E. Sarriera Associates

WESTON

Mr. Duane Heaton

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November 7, 1990

On November 21, 1989, ATEC resampled some of the drums sampled on August 9, 1989 because their identification numbers washed off. Additionally, half-buried drums were excavated and sampled. On November 23, 1989, 24 drums were overpacked by SET Environmental, Inc. (SET) personnel.

On December 6, 1989, Metropolitan Waste Systems, Inc. (MWSI) excavated approximately one foot of soil from an area approximately 20 feet by 20 feet and placed the soil into a 20-cubic yard rolloff. At this time, ATEC collected a composite sample of the soil in the rolloff, and split the sample with the TAT for selected volatile organics analysis. TAT samples were analyzed at Grace Analytical Laboratory, Inc., in Berkeley, Illinois under TAT Analytical Services TDD# 5-8912-L04. Results of this sampling are shown below.

TABLE 1

Summary of TAT Analytical Results
for Selected Volatile Organics in Soil

SW Highway Site, Orland Park, Illinois
December 6, 1989

Contaminant	in ppb
Methylene Chloride	462
Acetone	4010
2-Butanone	262J
Toluene	3500
Xylene (total)	1060

J = estimated value

On December 12, 1989, SET personnel transported 15 drums of ignitable material and one drum of caustic to Treatment #1 in Houston, Texas, and 17 drums of non-ignitable material to Ultra Chem in Joliet, Illinois. On May 10, 1990, ATEC personnel resampled the soil in the rolloff box, split the sample with the TAT and analyzed the samples for Toxicity Characteristic Leaching Procedure (TCLP)-solvents analysis. TAT samples were analyzed at Weston-Gulf Coast Laboratories, Inc., in University Park, Illinois, under TAT Analytical Services TDD# 5-9005-L05. Results of this sampling are presented below.

WESTON

Mr. Duane Heaton

-5-

November 7, 1990

TABLE 2

Summary of TAT Analytical Results
for TCLP solvents in soil

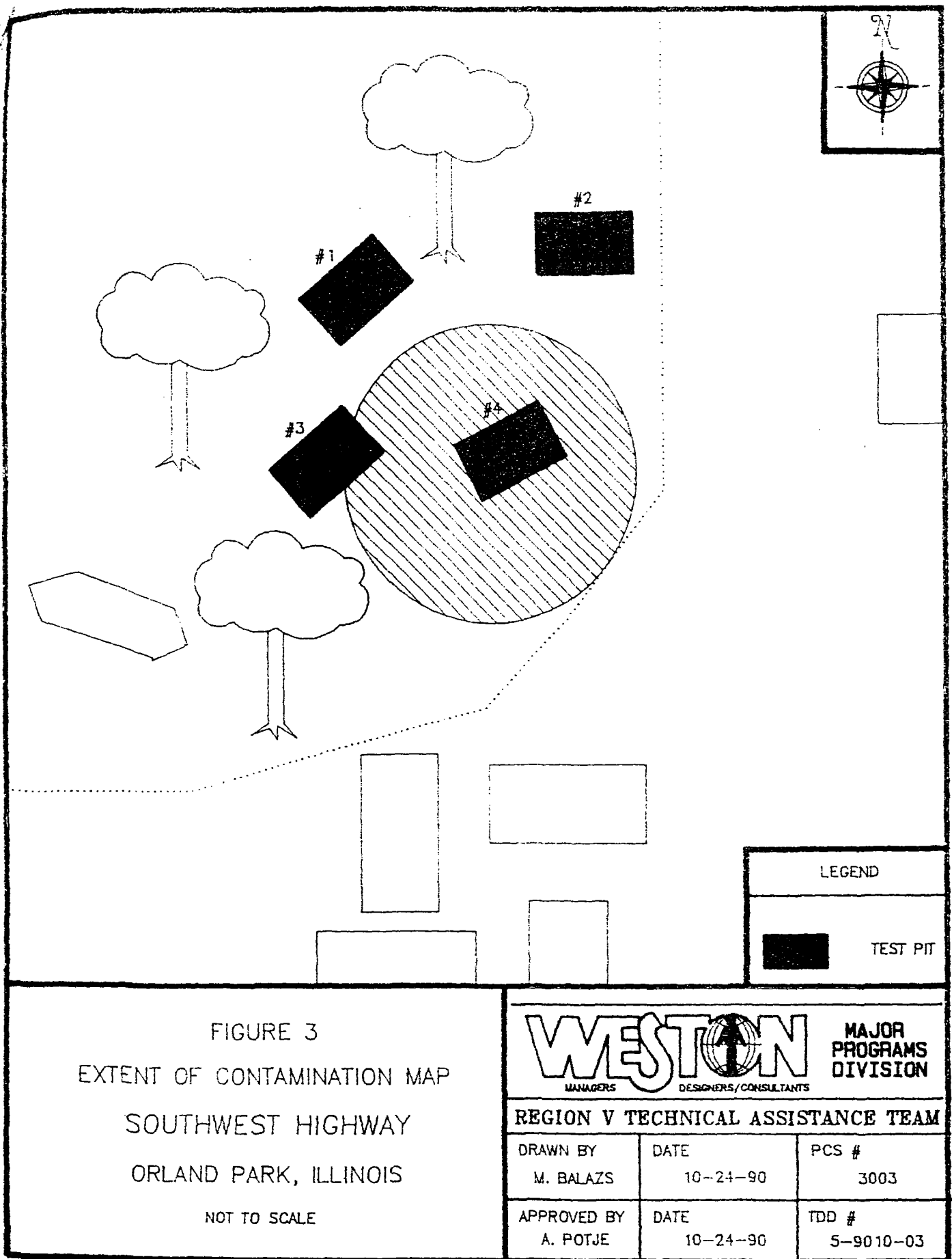
SW Highway site, Orland Park, Illinois
May 10, 1990

Contaminant	in ppb
Vinyl chloride	BDL
1,1-Dichloroethene	BDL
Chloroform	BDL
1,2-Dichloroethane	BDL
Carbon Tetrachloride	BDL
2-Butanone	BDL
Trichloroethene	BDL
Benzene	2 J
Tetrachloroethene	BDL
Chlorobenzene	4 J

BDL = below laboratory method detection limit
J = estimated value

In September 1990, MWS received an Illinois Environmental Protection Agency (IEPA) permit to dispose of excavated soil from the drum area. In October 1990, representatives from the PRP, Prairie Materials, and Chemical Waste Management (CWM) signed a contract for acceptance of the excavated soil at the CWM CID Landfill in Chicago, Illinois. MWS then planned to remobilize to excavate an additional two to three feet of soil.

On October 19, 1990, MWS excavated approximately 20 cubic yards of soil into a dump truck. The dump truck transported the soil to CID Landfill. As the excavation proceeded and air monitoring readings via HNU photoionization detector (HNU) continued to rise, it was evident that the contaminated area was larger than projected. In an attempt to determine the horizontal and vertical extent of contamination, three six-foot deep test pits were excavated in the middle of the drum area (Figure 3). The excavation within the drum area stopped at 12 feet because water (either ground water or a buried stream bed) was encountered. HNU readings in pits 1 and 2 were between one and two units, while HNU readings in pit 3 were





Mr. Duane Heaton

-7-

November 7, 1990

between five and ten units. Background levels were approximately 0.1 units. HNU readings in pit 4 were between 100 and 400 units.

On October 22, 1990, the 20-cubic yard rolloff that has been on site since December 1989 was transported to the CID Landfill for disposal.

On October 29 and 30, 1990, TAT and PRP contractor Prairie Environmental Specialists of West Chicago returned to the site. Prairie Environmental installed four monitoring wells and drilled nine soil borings (Figure 4). Split spoon samples were collected from the soil borings at 3.5 to 5 feet, 8.5 to 10 feet, 10 to 12 feet, and 12 to 14 feet. Prairie Environmental is currently analyzing these samples at an EPA-approved laboratory.

Should you have any questions or require additional information, please feel free to contact us.

Very Truly Yours,

A handwritten signature in cursive script, appearing to read "William R. Doyle".

William R. Doyle
Technical Assistance Team
Leader, Region V

MB:ap
cc:Len Zintak, OSC
attachment

REFERENCE 2

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLPC

DIVISION

Drum Disposal Area / ILD 984791681 I. D. or FILE NO.

Re: Village of Mokena wells

Conversation with: Bob Buchler, Water Operator

(☒) I Called Party () Party Called Me DATE 9/1/91 TIME 1:30 pm

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

What Other Party Said:

① Introduction. I'd
like to get some information
about the village wells.
How many wells do you
have?

② We have 3 wells.

③ Are they all bonded?

④ Well, there are 3 diff.
locations & there are all pumped
into the distribution system.

⑤ Does any one well produce
more than 40% of the total?

⑥ No. We rotate them on
a daily basis, so they all
produce about 33%.

⑦ What about this well - I think
it's no. 4 - near a sewage
disposal plant? Is it for
industrial use?

⑧ Well, capped 2 wells
One is just west of
use reverse side if necessary

Judy J. Triller
Signature

EPS I
Title

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLPC

DIVISION

Drum Disposal Area / ILD 984791681 I. D. or FILE NO.

Re: Village of Mokena wells / water supply

Conversation with: Bob Buchter, Water Operator

(✓) I Called Party () Party Called Me DATE 9/10/91 TIME 1:30 p

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

What Other Party Said:

⑧ 708-628-2626

A guy named Steve
Phillips.

①⑨ Thanks. Approx how
many people do your
wells serve?

⑩ About 5000.

⑪ Thanks for the inform-
ation.

use reverse side if necessary

Judy J. Trillie
Signature

IL 532-0727
EPA 129 (Rev. 1/81)

EPS I
Title

REFERENCE 3

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLPC

DIVISION

Drum Disposal Area 1 ILD 984791081. I. D. or FILE NO. _____

Re: Citizens Utility Water Distribution

Conversation with: Marvin Strong, Operations Mgr. - Cit. Util.

(☒) I Called Party () Party Called Me DATE 9/17/91 TIME 9:15 AM

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

① Introduction. I'm trying
to figure out water supply
in area southwest of Oland
Park.

What Other Party Said:

② Okay, we've got 11 water
systems in Chicago public
area from Mt. Prospect
north to Mokena - Frank
in south. Two of the systems
are on lake water now &
we'll be switching more
in future.
The two Oland Hills
wells (1+2). Then there's
another well - 5 miles or so
in Oland Hills that's
strictly domestic.

③ The 2 Oland Hills wells -
do they serve just that

use reverse side if necessary

Judy J. Triller

IL 532-0727
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Signature

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Title

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook
COUNTY

DLPC
DIVISION

Drum Disposal Area 1 ILD 984791681. I. D. or FILE NO.

Re: Citizens Utility Water Distribution

Conversation with: Marvin Strong, Operations Mgr.

(☒) I Called Party () Party Called Me DATE 9/17/91 TIME 9:15 AM

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

What Other Party Said:

(9) So it's not even connected?

(8) it's lake water, like
from Jolley Park.
There is a well, but it's
off-line.

(10) Where in this area do
you reside?

(10) Right.

(12) I live resid. typically,
from 159th St to 96th
Trumbull to west, 171st
St. to south of 88th Ave on
the east.

(13) Do you know anything
about Chickasaw Hills utility?

(14) Not really, I think it's
privately owned by a
man named Harold
use reverse side if necessary

Quay J. Triller
Signature

ERS I
Title

REFERENCE 4

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLPC

DIVISION

Drum Disposal Area - 1 ILD 984791681 I. D. or FILE NO.

Re: Records concerning Drum Disposal Area

Conversation with: Tom Mangan, President of Prairie Environ. Specialists

(☒) I Called Party () Party Called Me DATE 9/18/91 TIME :

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

What Other Party Said:

① Introduction. Have records
up to Oct. of 1990 when mon-
itoring wells were installed
+ more soil samples taken +
am trying to find out what
happened after that.

② I have a report on
hydrogeologic findings +
draft for remedial ^{action} activities
work plan.

The area is actually less
than one acre. The drums
were in a shallow depression

③ What did the samples show?

④ One of the wells had
benzene at 55 ppb. The rest
were clean. The gnd.
water flow is south -

use reverse side if necessary

Quay J. J. J. J.

IL 532-0727
EPA 129 (Rev. 1/81)

Signature

EPS I'

Title

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLPC

DIVISION

Drum Disposal Area / ILD 984791681 I. D. or FILE NO.

Re: Records concerning Drum Disposal Area

Conversation with: Tom Mangan, Pres. Prairie Environ. Specialists

(☒) I Called Party () Party Called Me DATE 9/18/91 TIME :

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

What Other Party Said:

⑤ Do you know if city water
goes that far south?

is coming from the area
where we're working. I
don't think it would
interfere, but they have to
work on getting permits

⑥ No, I don't believe it
does. The homes in the
area have spot wells &
from the well logs we've
gotten these wells are in
shallow bedrock. Bedrock
I think, is about 90 feet
& there are some clay
layers in the upper
layers.

⑦ Could I get a copy of some
of the records/results?

use reverse side if necessary

Judy J. Triller
Signature

EPS I
Title

REFERENCE 5

①

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLPC

DIVISION

984791681

Drum Disposal Area 1 ILD #19 I. D. or FILE NO. _____

Re: Orland Park Water Supply + Distribution

Conversation with: Larry Hock, Water Operator

(☒) I Called Party () Party Called Me DATE 9/25/91 TIME 4:00 pm

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

What Other Party Said:

① Introduction I
I would like to get an idea
about the water supply +
distribution of Orland Park.
Does the village have wells, or
are you on Lake water?

② I'll get water from
Chicago Lake Michigan.

③ Does that take care of ~~the~~ the
entire village, or are there
some places in corp. boundaries
that don't get city water?

④ All the village corp. homes
are served by village water
+ some areas outside the
village get village water.

⑤ I know there are some new
developments along South-
west Hwy - near 179th St

use reverse side if necessary

Judy J. Triller
Signature

EPS
Title

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

COOK

COUNTY

DLPC

DIVISION

DRUM DISPOSAL AREA 1 TLD 984791686 I. D. or FILE NO.

Re: ORLAND PARK - WATER SUPPLY & DISTRIBUTION

Conversation with: LARRY HACKMAN, WATER OPERATOR

(✓) I Called Party () Party Called Me DATE 9/25/91 TIME 4:00 pm

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

What Other Party Said:

(11) is there that subdivision?

family homes, but no
subdivisions

There's Alpine Subdivision
that doesn't have village
water. He put in wells.

(12) It's at 1167th & 71st Rd.
North of 1167th & east of 71st
Road.

use reverse side if necessary

Judy J. Triller

Signature

ERS I

Title

REFERENCE 6

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLPC

DIVISION

DRUM DISPOSAL AREA / ILD 98479/681. I. D. or FILE NO. _____

Re: General Information about site

Conversation with: Leonard Zentak

(☒) I Called Party () Party Called Me DATE 9/26/91 TIME 10:15 am

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

① Introduction. I have a few
questions about the Southwest
Hwy. Drums site. Will there be
things stored right now?

③ Is good water at 12 feet?

What Other Party Said:

② They've removed the drums
they've removed the
contaminated soil to
approx. 12 feet. But, there's
still contaminated soil &
the good water appears to
be impacted. When they
dug the pit there was
water & it had a stream.

④ Around there - depends
on the rain.
They've proposed a soil
extraction system &
a ground water pump &
use reverse side if necessary

Quinn J. Jolley

IL 532-0727
EPA 129 (Rev. 1/81)

Signature

E.P.S. I

Title

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY

TELEPHONE CONVERSATION RECORD

Cook

COUNTY

DLP

DIVISION

Drum Disposal Area / ILD 984791681 I. D. or FILE NO. _____

Re: General Information about site

Conversation with: Leonard Zentak

(☒) I Called Party () Party Called Me DATE 9/12/91 TIME 10:15 a.m.

() Complainant () Violator () Public Inquiry () Partitioner

What I Said:

① Do you know anything about
the geology at the site?

② Have there been any samples
or will there be at other parts
of the site - or just around
the drum area?

③ Would you sample the wells

What Other Party Said:

about 80 feet deep.

④ It's fill. It's been filled
with construction debris
so there is a variety
materials - sand, gravel
clay.

⑤ It's been around the
drums. I don't really
have a reason to suspect
contamination anywhere
else. I may do additional
soil
sampling - and we may
sample those private wells

use reverse side if necessary

Quincy J. Jolley
Signature

ERS I
Title

REFERENCE 7

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STATE OF ILLINOIS
WILLIAM G. STRATTON, *Governor*
DEPARTMENT OF REGISTRATION AND EDUCATION
VERA M. BINKS, *Director*

DIVISION OF THE
STATE GEOLOGICAL SURVEY
JOHN C. FRYE, *Chief*
URBANA

CIRCULAR 198

GROUNDWATER POSSIBILITIES IN NORTHEASTERN ILLINOIS

A Preliminary Geologic Report

BY

R. E. BERGSTROM, J. W. FOSTER, LIDIA F. SELKREGG, and W. A. PRYOR

*Service activities concerning groundwater are performed jointly by
the Illinois State Geological Survey and the Illinois State Water Survey*



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STATE OF ILLINOIS
SPRINGFIELD, ILLINOIS

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URBANA, ILLINOIS
1955



GROUNDWATER POSSIBILITIES IN NORTHEASTERN ILLINOIS

A Preliminary Geologic Report

By

Robert E. Bergstrom, John W. Foster, Lidia F. Selkregg
and Wayne A. Pryor

ABSTRACT

Groundwater possibilities for domestic, municipal, and industrial supplies in northeastern Illinois range from poor to excellent. This report summarizes the geologic conditions controlling the availability of groundwater and suggests ways to obtain it under the prevailing conditions. Maps are presented which show: 1) groundwater possibilities from sand and gravel deposits, 2) groundwater possibilities in shallow bedrock, and 3) depth to the Galesville sandstone, the principal water-yielding formation for industrial and municipal groundwater in northeastern Illinois.

INTRODUCTION

Water that occurs in the earth and that is tapped with varying success by farm, municipal, and industrial wells is one of our most valuable natural resources. In some areas it is readily available for all purposes - from small domestic supplies to great industrial or municipal supplies - whereas in other areas even a little groundwater is difficult to obtain in wells.

The basic conditions that control the availability of water in the earth (groundwater) are natural and fixed. Skillful well design, construction, and management are extremely important factors in obtaining satisfactory amounts of groundwater, but these factors apply at any potential well site only if natural geologic conditions favor the type of supply desired. For example, even the most elaborate and careful well construction does not obtain a groundwater supply for a large city at a site where all the earth formations to great depths are dense, tight materials which do not allow water to flow into the well.

Northeastern Illinois has geologic conditions that make it one of the most favorable areas in the State for obtaining groundwater. Farm supplies from shallow sources are readily available in much of the area. Municipal and industrial supplies are widely available from deep sources and are also locally available from shallow sources.

The purpose of this report is to provide general information on the availability of groundwater in nine counties: Cook, DuPage, Grundy, Kane, Kankakee, Kendall, Lake, McHenry, and Will. This region has an area of some 5000 square miles and a population of over 5,250,000. It includes densely populated

and industrialized sections, such as Cook County, and sparsely populated agricultural districts. Evaluation of the groundwater possibilities within the region, therefore, has taken into consideration both domestic and large-scale demands.

This report is based on a study of the nine counties by six members of the Groundwater Division of the Illinois State Geological Survey: Robert E. Bergstrom, Merlyn B. Buhle, John W. Foster, James E. Hackett, Wayne A. Pryor, and Lidia F. Selkregg. It is the second of a series prepared to assist in water-supply improvement on the farms of Illinois.* The Geological Survey is cooperating in this program with the extension services of the Agricultural Engineering Department, University of Illinois. The region covered here is Agricultural Extension District 1, eastern part. We hope this report will improve the general understanding of groundwater occurrence and assist in the procurement of suitable groundwater supplies.

The authors are happy to acknowledge the generous assistance given in this study by many drilling contractors of northeastern Illinois and by members of the State Water Survey, particularly W. B. Millis of Chicago.

GEOLOGY OF THE REGION

The main features of the northeastern Illinois landscape were developed during the geologically recent past, when great continental glaciers covered much of northern United States. From centers of snow accumulation in Canada, these vast ice sheets advanced southward, as well as in other directions. They scraped the land surface over which they moved, picked up and transported rock debris, and deposited most of the debris at the melting outer borders of the ice.

The glacial deposits, called drift, form an irregular surface blanket that covers the solid layered bedrock in northeastern Illinois. In excavations, such as quarries and road cuts, and in deeply eroded stream valleys, the drift mantle has been removed and the underlying bedrock exposed. In most of the area drilling penetrates varying thicknesses of unconsolidated glacial material before striking bedrock. Not only the deposits themselves but the form of some of the deposits were produced by glacial processes. For example, the prominent ridges that parallel Lake Michigan in McHenry, Lake, Kane, Cook, DuPage, and Will counties are thick accumulations of mixed clay, silt, sand, pebbles, and boulders heaped up along the front of a melting glacier. These ridges are called moraines. Cook, Grundy, and Kankakee counties contain wide flat areas which were the sites of shallow glacial lakes. Some valleys of northeastern Illinois have broad sand and gravel flats which were built up by large streams fed by the melting glaciers.

Because the great glaciations of the Ice Age occurred quite recently in geologic time, the landscape of northeastern Illinois is actually fairly young. An older landscape - carved in the bedrock largely before the glaciers advanced

* The first report, Water Wells for Farm Supply in Central and Eastern Illinois, by John W. Foster and Lidia F. Selkregg, has been issued by the Illinois State Geological Survey as Circular 192, and is available free of charge from the Survey in Urbana.

into the area - would be found if the mantle of drift were stripped away. Despite its burial beneath glacial deposits which locally attain a thickness of several hundred feet, the bedrock surface is not entirely beyond our range of study. Thousands of water wells drilled through the glacial drift into the bedrock provide detailed information on the bedrock topography. The bedrock surface has hills and valleys just as the land surface does. Some surface valleys coincide with valleys in the bedrock, but in areas of very thick drift the surface and buried valleys may not correspond.

In contrast to the complex, heterogeneous glacial deposits, the bedrock formations present a more orderly picture. They consist of layers of limestone, shale, and sandstone arranged one upon the other like the pages of a thick book. Although they are firm, dense rocks now, they were originally deposited as loose sediments in shallow seas which invaded the continent. They were buried and hardened into solid rock during the several hundred million years after the seas had retreated from northeastern Illinois. The rocks were later gently tilted from their original horizontal position, so that today they dip southeastward 10 to 15 feet per mile. The tilted beds are cut by the erosion surface beneath the glacial drift, producing rudely parallel belts that trend approximately north-south. In McHenry, Lake, Cook, DuPage, Will, and Kane counties, a limestone-like rock, called dolomite, underlies the glacial drift, whereas to the west bands of older shale and sandstone lie directly beneath the drift.

Beneath the 3000 or 4000 feet of layered rocks is ancient crystalline rock which forms the basement. The crystalline rock is mainly granite as shown by a few very deep wells in Illinois. Crystalline basement rock is at the surface today in the St. Francois Mountains of Missouri and the Black Hills of South Dakota where there has been marked uplift and deep erosion of the overlying stratified rock.

WATER IN THE EARTH

Water that occurs in the ground and comes to the surface in springs and wells has long been regarded as somewhat mysterious. The details of its occurrence, source, quantity, quality, temperature, pressure, and movement are complex, but the general principles pertaining to groundwater are relatively simple and well understood.

Water falling on or flowing over the ground seeps through openings between loose particles of the soil and percolates downward. Below a certain depth, all openings in the loose surface material (such as glacial drift) and in the underlying bedrock are filled with water. This water occurs in pores between grains and in rock crevices, and not in streams or lakes (except only locally in limestone caves). Because rainfall continually contributes to or replenishes the supply, groundwater is a renewable resource.

The upper surface of the water-saturated zone is called the water table. Its position is shown by the depth at which water stands in shallow wells, borings, and excavations. It roughly parallels the surface topography, rising under the uplands and intersecting the ground surface along perennial streams, lakes, and swamps.

Water from the saturated zone is not everywhere available for withdrawal by wells, as this is controlled by the details of the local geology. A bed of clay may contain a large volume of water per cubic foot but hold the water so tightly that a well drilled into it may be "dry." On the other hand, a bed of pea gravel may contain less water per cubic foot than the clay, but the water in the gravel is not held and can move quite readily between the grains and into a well bore. As the well is pumped, more water flows in.

The problem involved in obtaining a groundwater supply, therefore, is to strike a "formation" that will transmit its water to the well bore. Most drilled wells that are "dry" are unsuccessful not because of lack of water in the rocks but because water-yielding (permeable) formations are not present.

A special word should be said about the geology of artesian wells. Water that occurs in some of the deep permeable sandstone formations underlying northeastern Illinois comes from rainfall, which enters these rocks some distance away, where they are close to the surface. Because relatively water-tight formations occur above the deep sandstones in northeastern Illinois, the water in the deep beds behaves somewhat differently from that in beds at shallower depths. It is under natural pressure and therefore may rise several hundred feet in a well that penetrates a deep sandstone. We call these wells artesian wells. In the days before the water from the deep sandstones was heavily exploited by industries and cities, some artesian wells flowed without pumping.

WATER-YIELDING FORMATIONS

The most important water-yielding deposits in the glacial drift above the bedrock are beds of clean, loose sand and gravel. They range from thin discontinuous streaks to extensive beds tens of feet thick. Drilled wells are usually productive where the sand and gravel is a few feet or more thick and water-bearing. Where only thin streaks of sand and gravel are present in otherwise tight glacial drift, large-diameter dug wells are generally the only way of obtaining groundwater from the shallow drift.

The grain size (texture) of sand and gravel deposits is extremely important in determining their water-yielding properties. Good water-yielding sands are coarser than sugar and nearly all the grains are the same size. The percentage of clay and silt in sand and gravel deposits should be low because this fine material occupies the spaces between the larger grains and slows water movement. Few natural deposits have the uniform coarse textures that are ideal; however, a skillful drilling contractor, familiar with sand and gravel well construction, can by proper design and development often make a satisfactory well in formations that are fine-grained or not uniformly sorted, or in formations that contain some clay and silt.

Much of the bedrock beneath the glacial drift in northeastern Illinois is a limestone-like rock called dolomite. Groundwater in limestone and dolomite occurs in fractures and in channels dissolved out of the rock. The success of a water well drilled in limestone or dolomite, therefore, depends upon the well bore actually penetrating water-filled joints and channels.

The thick dolomite in much of northeastern Illinois is well creviced and fractured, particularly in the upper part, so that it is an important source of

groundwater. The dolomite is especially good for groundwater at the many places where it is overlain by drift containing substantial sand and gravel deposits. On the other hand, where the drift is tight and non-water-yielding, the underlying dolomite is also commonly "tight." Some drilling contractors substantially improve the performance of limestone and dolomite wells in the area by enlarging existing joints and channels with hydrochloric acid, which dissolves part of the rock with which it comes in contact.

Another important water-yielding rock of northeastern Illinois is sandstone. It occurs at a depth of several hundred feet and more throughout the area. In southwestern Kendall County an important water-yielding sandstone lies just beneath the glacial drift.

Water occurs in sandstone between the sand grains, just as it does in loose sand deposits. Therefore, the size and uniformity of the grains is extremely important. Sandstone also contains variable amounts of cement, which binds the grains together. The amount of cement is another factor that affects the water yield. Tightly cemented sandstones are not good formations for water unless they are well jointed or fractured, like limestones.

The deep sandstones of northeastern Illinois - the Galesville sandstone in particular - and the shallower St. Peter sandstone are good groundwater sources because they are uniform in texture and loosely cemented. Less satisfactory for groundwater are the fine-grained tightly cemented near-surface sandstones of the Pennsylvanian system ("Coal Measures") in Grundy County.

COOK COUNTY

Groundwater possibilities in sand and gravel beds in Cook County are best in the upland areas in the northwestern, south-central, and southern parts of the county. These water-yielding deposits are principally sand and fine to coarse gravel, which are in some places as much as 100 feet thick. They occur mainly in the lower half of the glacial drift. Best possibilities for industrial and municipal supplies of water in sand and gravel are near Elgin, Bartlett, Arlington Heights, and Orland Park; also locally elsewhere.

In central Cook County and along the Des Plaines River southwest of Summit, the glacial drift is thin and sand and gravel deposits are correspondingly thin or are absent. Here shallow sand deposits are mainly fine-grained or silty, and virtually all drilled wells penetrate solid bedrock for groundwater supplies.

The Chicago Plain lies generally east of Homewood, Oak Forest, Evergreen Park, Justice, LaGrange, Bellwood, Niles, and Northfield. This lowland is underlain by silts and clays deposited on the floor of ancient Lake Chicago. Water-bearing sands are extremely scarce in the lake beds. The surface of the Chicago Plain is marked with more-or-less continuous ancient beach ridges and spits of clean sand, for example, the Glenwood Beach running southeastward from Glenwood and the Wilmette spit fanning south-southwestward from Wilmette. The sands of these features are generally too thin to be suitable for water wells, but locally the sands extend to depths of 25 to 30 feet and are water-bearing in the lower part. A narrow band of beach sand along the present Lake Michigan shore yields groundwater to sand-point wells in scattered places.

The common source of groundwater for domestic wells in Cook County is in the upper part of the dolomitic bedrock, lying immediately below the drift. Beneath the silts and clays of the Chicago Plain in the eastern part of Cook County, the dolomitic bedrock is relatively tight and locally not water-yielding. Areas where the shallow dolomite is particularly favorable for water wells are in the western half of T. 35 N., R. 14 E., near Chicago Heights, and in parts of Ts. 38 and 39 N., R. 12 E., near LaGrange.

Cook County is underlain by deeply buried sandstone, a reliable source of municipal and industrial water supplies. The Galesville sandstone ranges in depth from 1000 feet in northwestern Cook County to 1800 feet in the extreme southeastern part. Most municipal and major industrial water supplies in the county are obtained from this aquifer.

In north-central Cook County, in the vicinity of Des Plaines, bedrock formations have been severely broken and displaced, or faulted (fig. 3). Uncommonly great thicknesses of shale are encountered locally within the Des Plaines faulted area, and dolomite formations may be thin or absent. Groundwater possibilities in dolomite are therefore poorer here than they are in most of Cook County.

DUPAGE COUNTY

Thick glacial drift containing water-yielding sand and gravel deposits overlies the dolomite in DuPage County. The most favorable areas for sand and

generally over 175 feet thick. Sand and gravel beds are locally as much as 75 to 100 feet thick. Sand and gravel suitable as farm and domestic water sources are found in many places in the upper 75 feet of drift, but some of the deposits lie as deep as 200 feet.

In the western two-thirds of the county, groundwater supplies can be obtained locally from sand and gravel, but the possibilities of finding very favorable deposits are generally poorer than in the east. In the southwestern corner of the county the drift is less than 50 feet thick.

Groundwater generally can be obtained from open cracks and crevices in dolomite that lies directly below the glacial drift in most of the county. The dolomite is particularly well creviced along the Fox River north of McHenry and provides an excellent groundwater source. Shale beds are found below the drift along the western edge of the county and in T. 43 N., Rs. 5 and 6 E. Because shale is generally tight and non-water-yielding, it is often necessary to drill into the underlying dolomite.

Deep water-bearing sandstone occurs throughout McHenry County. Depth to the top of the Galesville sandstone ranges from about 800 feet in the southwest to about 1100 feet along the eastern edge of the county.

WILL COUNTY

Farm and domestic supplies of groundwater in most of Will County are obtainable with wells 50 to 150 feet deep. Many of these wells obtain groundwater from sand and gravel beds within the glacial drift. Some wells penetrate through the drift and obtain water from open cracks and crevices in dolomite. Along the Des Plaines River and in extreme southern Will County, the dolomite lies at or near the surface, so water-yielding sands and gravels are scarce. Best possibilities for high-capacity wells in sand and gravel are in parts of T. 36 N., R. 11 E., and T. 34 N., R. 14 E., where the drift is generally over 100 feet thick and where widespread sand and gravel beds are known.

West of the DuPage River and along the Kankakee River in southern Will County, thick shale beds occur below the glacial drift at most places. Where these shales are non-water-yielding, wells must be deepened to penetrate dolomite at depths of 150 to 300 feet. South of Braidwood, in extreme southwestern Will County, sandstone beds of the Pennsylvanian system lie beneath 10 to 50 feet of glacial drift. These sandstones yield water to a number of farm and domestic wells, but they are not considered suitable for high-capacity wells.

Deep water-bearing sandstone occurs throughout Will County. Top of the Galesville sandstone lies at a depth of about 1300 feet in the northwest and about 1900 feet in the extreme southeast. Where sandstone lies deeper than 1000 feet below sea level, as in southeastern Will County, consideration should be given to possible poor water quality.

PLANNING HIGH-CAPACITY WELLS

Most areas in northeastern Illinois are underlain by one or more formations favorable for the construction of high-capacity water wells. The key to successful well construction in the region lies not so much in where the wells are located but how carefully the wells are adapted to the geology and hydrology.

REFERENCE 8

Copy -
1. Dept. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

INSTRUCT' TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
- a. Dug . Bored . Hole Diam. 5 in. Depth 125 ft.
Curb material . Buried Slab: Yes No
- b. Drilled . Drive Pipe Diam. 5 in. Depth 57 ft.
c. Drilled . Finished in Drift . In Rock X
Tubular . Gravel Packed .
- d. Grout:
- | (KIND) | FROM (Ft.) | TO (Ft.) |
|--------|------------|----------|
| | | |
| | | |
| | | |
2. Distance to Nearest:
- Building 25 Ft. Seepage Tile Field 75'
Cess Pool Sewer (non Cast Iron)
Privy Sewer (Cast Iron)
Septic Tank 50' Barnyard
Leaching Pit Manure Pile
3. Is water from this well to be used for human consumption?
Yes X No
4. Date well completed 8-15-78
5. Permanent Pump Installed? Yes No X
Manufacturer Type
- Capacity gpm. Depth of setting ft.
6. Well Top Sealed? Yes X No
7. Pitless Adaptor Installed? Yes No X
8. Well Disinfected? Yes X No
9. Water Sample Submitted? Yes No X

REMARKS:

IDPH 4.065
10-72
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Dennis Rogel Well No. 1
Address 11500 W. 193rd St.
- Driller Charles Fykes License No. 23
Permit No. 77899 Date 8-8-78
11. Water from Limestone 13. County Will
at depth 57 to 125 ft.
14. Screen: Diam. in. Sec. 6 / 1
Length: ft. Slot in. Twp. 35N
Rge. 12E
Elev.
15. Casing and Liner Pipe
- | Diam. (in.) | Kind and Weight | From (Ft.) | To (Ft.) |
|-------------|-----------------|------------|----------|
| 5" | A-53 15 lbs. | 0' | 57' |
| | | | |
| | | | |
16. Size Hole below casing: 5 in.
17. Static level 45 ft. below casing top which is +1 ft.
above ground level. Pumping level 50 ft. when pumping at 10 gpm for 1 hours.

SHOW LOCATION IN SECTION PLAT
SE SE SE

18.	FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
	Clay	40'	40'
	Gravel	17'	57'
	Limestone	68'	125'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Sharon Taylor DATE Dec. 20, 1978

Yellow Copy -
Ill. Dept. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

INSTRUCTIC TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug 5 in. Hole Diam. 5 in. Depth 125 ft.
Curb material . Buried Slab: Yes No
b. Driven . Drive Pipe Diam. 5 in. Depth 63 ft.
c. Drilled X. Finished in Drift . In Rock X
Tubular . Gravel Packed
d. Grout:

(KIND)	FROM (FT.)	TO (FT.)

2. Distance to Nearest:

- Building 30 Ft. Seepage Tile Field 75'
Cess Pool Sewer (non Cast Iron)
Privy Sewer (Cast Iron)
Septic Tank 50' Barnyard
Leaching Pit Manure Pile

3. Is water from this well to be used for human consumption?

- Yes X No
4. Date well completed 8-8-78
5. Permanent Pump Installed? Yes No X
Manufacturer Type
Capacity gpm. Depth of setting ft.
6. Well Top Sealed? Yes X No
7. Pitless Adaptor Installed? Yes No X
8. Well Disinfected? Yes X No
9. Water Sample Submitted? Yes No X

REMARKS:

IDPH 4.065
10-72
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner John Gallagher Well No. 1
Address 11210 W. 193rd St. - Mokena
Driller Charels Fykes License No. 102-23
11. Permit No. 77757 Date 8-3-78
12. Water from Limestone 13. County Will
at depth 63 to 125 ft. Sec. 6 1/2
14. Screen: Diam. in. Twp. 35N
Length: ft. Slot Rge. 12E
Elev.

SHOW LOCATION IN SECTION PLAT
NE SE NE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (ft.)	To (ft.)
5"	A-53 15 lbs.	0	63'

16. Size Hole below casing: 5 in.

17. Static level 60 ft. below casing top which is +1 ft. above ground level. Pumping level 70 ft. when pumping at 10 gpm for 1 hours.

FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	20'	20'
Gravel	43'	63'
Limestone	62'	125'

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Shirley J. Jorgensen DATE March 28, 1979

White Copy - Well Owner
Yellow Copy - Well Contractor
Blue Copy - Well Owner

FILL IN ALL PERTINENT INFORMATION. REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug 5 in. Bored 5 in. Hole Diam. 5 in. Depth 140 ft.
Curb material . Buried Slab: Yes No
b. Driven . Drive Pipe Diam. in. Depth ft.
c. Drilled X. Finished in Drift . In Rock X.
Tubular . Gravel Packed .
d. Grout:

(KIND)	FROM (FT.)	TO (FT.)
<u>Cuttings</u>		

2. Distance to Nearest:

- Building Ft. Seepage Tile Field 75
Cess Pool Sewer (non Cast iron)
Privy Sewer (Cast iron)
Septic Tank 50 Barnyard
Leaching Pit Manure Pile

3. Well furnishes water for human consumption? Yes X No
4. Date well completed 8-23-79
5. Permanent Pump Installed? Yes X Date 9-4-79 No
Manufacturer Waco Type Subm Location well
Capacity 20 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No Type
7. Pitless Adapter Installed? Yes X No Model Number
How attached to casing? Buried
8. Well Disinfected? Yes X No
9. Pump and Equipment Disinfected? Yes X No
10. Pressure Tank Size 82 gal. Type galn
Location basement
11. Water Sample Submitted? Yes No X

REMARKS:

owner instructed to do so

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner James Laneville Well No.
Address 14793 Janelle
Driller Phil Kniering License No. 1003-82
Permit No. 88942 Date 8-23-79
12. Water from Rock 13. County Will
at depth 45 to 140 ft. Sec. 6.10
14. Screen: Diam. in. Twp. 35.77
Length: ft. Slot in. Rge. 13E
Elev.

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (ft.)	To (ft.)
<u>5</u>	<u>sch 40</u>	<u>0</u>	<u>63</u>

SHOW LOCATION IN SECTION PLAT
lot 493
SE SW SW

only hills

16. Size Hole below casing: 5 in.
17. Static level 45 ft. below casing top which is 1 ft. above ground level. Pumping level 80 ft. when pumping at 20 gpm for 4 hours.

18.	FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
	<u>sch</u>	<u>0</u>	<u>3</u>
	<u>clay</u>	<u>3</u>	<u>15</u>
	<u>sand & gravel</u>	<u>15</u>	<u>19</u>
	<u>clay</u>	<u>19</u>	<u>50</u>
	<u>sand gravel</u>	<u>50</u>	<u>63</u>
	<u>Rock</u>	<u>63</u>	<u>140</u>

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Phil Kniering DATE 9-5-79

INSTRUCTIONS TO DRILLERS

INSTRUCTIONS TO DRILLERS

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Jones Meka Well No. _____
Address 1600 W. 179th, Ocala FL 32668-4437
Driller Rod Weathers License No. 102-0020 H
11. Permit No. 000478 Date 3-10-88
12. Water from rock formation Cook
- | | | | |
|--|--|--|---|
| | | | X |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
- at depth _____ ft.
14. Screen: Diam. _____ in.
Length: _____ ft. Slot _____
Elev. _____
15. Casing and Liner Pipe _____

Diam. (In.)	Kind and Weight	From (Pl.)	To (Pl.)
5	Black Steel	0	62

16. Size Hole below casing: 5 in.
17. Static level 15 ft. below casing top which is 1 ft. above ground level. Pumping level 10 ft. when pumping at 10 gpm for 4 hours.

[illegible]

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED R. Weller Long / Kh DATE 11-3-88

IDPH 4.065

Copy -
Ill. Dept. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

GEOLOGICAL AND WATER SURVEYS WELL RECORD

- Type of Well
 - Dug . Bored . Hole Diam. in. Depth ft.
Curb material . Buried Slab: Yes No
 - Driven . Drive Pipe Diam. in. Depth ft.
 - Drilled ✓. Finished in Drift . In Rock ✓.
Tubular . Gravel Packed .
 - Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
- Distance to Nearest:

Building	<u>25</u>	Ft.	Seepage Tile Field	<u>80</u>
Cess Pool			Sewer (non Cast iron)	
Privy			Sewer (Cast iron)	
Septic Tank	<u>65</u>		Barnyard	
Leaching Pit			Manure Pile	
- Well furnishes water for human consumption? Yes ✓ No
- Date well completed 6/15/76
- Permanent Pump Installed? Yes ✓ Date No
 Manufacturer Type Location
 Capacity gpm. Depth of Setting 40 Ft.
 Well Top Sealed? Yes ✓ No Type
 Pitless Adapter Installed? Yes ✓ No
 Manufacturer Model Number
 How attached to casing? Yes No
 Well Disinfected? Yes ✓ No
 Pump and Equipment Disinfected? Yes ✓ No
 Pressure Tank Size 80 gal. Type
 Location
 Water Sample Submitted? Yes No ✓

REMARKS:

- Property owner John Kucera Jr Well No.
Address 129 & WOLF RD
- Driller Frank Y. Jones License No. 1223-66
Permit No. 4123 Date 6/15/76
- Water from Rock Formation 13. County Clark
at depth 65 to 140 ft. Sec. 31.11
Screen: Diam. in. Twp. 32
Length: ft. Slot Rq. 12E
Elev.

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	A-53 20lb	0	65

SHOW LOCATION IN SECTION PLAT
N8 NE. SE.

- Size Hole below casing: 5 in.
- Static level 40 ft. below casing top which is 1 ft. above ground level. Pumping level 40 ft. when pumping at 40 gpm for 3 hours.

18.	FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
	YELLOW CLAY	10	10
	BLUE CLAY	5	15
	CORWEN & BOURDEES 14x	50	65
	LIME STONE	25	140

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Garry Hob DATE 6/17/76

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

- Type of Well
 - Dug ☐ Bored ☐ Hole Diam. 5 in. Depth 300 ft.
Curb material ☐ Burled Slab: Yes ☐ No ☐
 - Driven ☒ Drive Pipe Diam. ☐ in. Depth ☐ ft.
 - Drilled ☐ Finished in Drift ☐ In Rock ☒
 - Tubular ☐ Gravel Packed ☐
 - Grout:

(KIND)	FROM (FT.)	TO (FT.)
Outcrops		
- Distance to Nearest:

Building	_____ Ft.	Seepage Tile Field	<u>75</u>
Cess Pool	_____	Sewer (non Cast iron)	_____
Privy	_____	Sewer (Cast iron)	_____
Septic Tank	<u>50</u>	Barnyard	_____
Leaching Pit	_____	Manure Pile	_____
- Well furnishes water for human consumption? Yes ☒ No ☐
- Date well completed 4-3-85
- Permanent Pump Installed? Yes ☒ No ☐ Date 4-30-85
Manufacturer Reddy Type Sub Location Well
Capacity 20 gpm. Depth of Setting 80 Ft.
- Well Top Sealed? Yes ☒ No ☐ Type _____
- Pitless Adapter Installed? Yes ☒ No ☐ Model Number _____
- How attached to casing? Bolted
- Well Disinfected? Yes ☒ No ☐
- Pump and Equipment Disinfected? Yes ☒ No ☐
- Pressure Tank Size 12 gal. Type XX-202
- Location Greenwood
- Water Sample Submitted? Yes ☐ No ☒

REMARKS: County # 20922

Owner instructed to do so

GEOLOGICAL AND WATER SURVEYS WELL RECORD

- Property owner R. Farrell Well No. _____
Address 14325 Wooded Path, Deland Park
Driller Edgar Emerson License No. 102-84
Permit No. 117096 Date 3-28-85
Water from Rock 13. County Clark
at depth 40 to 300 ft.
14. Screen: Diam. _____ in. Sec. 21.1e
Length: _____ ft. Slot _____ in. Twp. 367N
Rge. 12E
Elev. _____
- Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
<u>5</u>	<u>Black 15 lb.</u>	<u>0</u>	<u>85</u>
- Size Hole below casing: 4 3/8 in.
- Static level 40 ft. below casing top which is _____ ft. above ground level. Pumping level 80 ft. when pumping at _____ gpm for _____ hours.

18.	FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
	<u>Sand</u>	<u>0</u>	<u>3</u>
	<u>Plat</u>	<u>3</u>	<u>70</u>
	<u>Gravel</u>	<u>70</u>	<u>83</u>
	<u>Rock</u>	<u>83</u>	<u>800</u>

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Edgar Emerson DATE 4-30-85

Copy of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE
DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST
JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER
SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

GEOLOGICAL AND WATER SURVEYS WELL RECORD

John Kucala, Sr.

10. Property owner John Kucala, Sr. Well No. 1002-66

Address 29 N. Water St.

Driller John Kucala, Sr. License No. 1002-66

11. Permit No. 46124 Date 6/14/76

12. Water from Rock 13. County Clark

at depth 65 to 140 ft.

14. Screen: Diam. 4 in.

Length: 75 ft. Slot 1/8

15. Casing and Liner Pipe

Diam. (in.) Kind and Weight From (ft.) To (ft.)

5 A-53 Steel 0 65

SHOW LOCATION IN SECTION PLAT

NE NE SE

16. Size Hole below casing: 5 in.

17. Static level 10 ft. below casing top which is 1 ft. above ground level. Pumping level 10 ft. when pumping at 100 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH

YELLOW CLAY THICKNESS 10 DEPTH OF BOTTOM 10

BLUE CLAY THICKNESS 10 DEPTH OF BOTTOM 20

GRAVEL & BOUNDBERS MIX THICKNESS 45 DEPTH OF BOTTOM 65

LIMESTONE THICKNESS 25 DEPTH OF BOTTOM 140

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Sunny Steel DATE 6/14/76

1. Type of Well

a. Dug Bored Hole Diam. In. Depth ft.

Curb material Burled Slab: Yes No

b. Driven Drive Pipe Diam. In. Depth ft.

c. Drilled Finished In Drift In Rock

Tubular Gravel Packed

d. Grout: (KIND) FROM (FT.) TO (FT.)

2. Distance to Nearest:

Building 10 Ft. Seepage Tile Field 80

Cess Pool Sewer (non Cast iron)

Privy Sewer (Cast iron)

Septic Tank 60 Barnyard

Leaching Pit Manure Pile

3. Well furnishes water for human consumption? Yes No

4. Date well completed 6/14/76

5. Permanent Pump Installed? Yes Date No

Manufacturer Type Location

Capacity gpm. Depth of Setting 10 Ft.

6. Well Top Sealed? Yes No Type

7. Pitless Adapter Installed? Yes No

Manufacturer Model Number

How attached to casing?

8. Well Disinfected? Yes No

9. Pump and Equipment Disinfected? Yes No

10. Pressure Tank Size 80 gal. Type Steel

Location Gravel space

11. Water Sample Submitted? Yes No

REMARKS:

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug 5 in. Bored 5 in. Hole Diam. 5 in. Depth 240 ft.
Curb material . Buried Slab: Yes No
b. Driven . Drive Pipe Diam. in. Depth ft.
c. Drilled . Finished in Drift . In Rock .
Tubular . Gravel Packed .
d. Grout:

(KIND)	FROM (FT.)	TO (FT.)
Cuttings		

2. Distance to Nearest:

- Building Ft. Seepage Tile Field 25
Cess Pool Sewer (non Cast iron)
Privy Sewer (Cast iron)
Septic Tank 50 Barnyard
Leaching Pit Manure Pile

3. Well furnishes water for human consumption? Yes No
4. Date well completed June 14, 1979
5. Permanent Pump Installed? Yes No
Manufacturer BAVO Type Subm Location Well Ft.
Capacity 2 gpm. Depth of Setting Ft.
6. Well Top Sealed? Yes No Type
7. Pitless Adapter Installed? Yes No Model Number
Manufacturer Williams
How attached to casing?
8. Well Disinfected? Yes No
9. Pump and Equipment Disinfected? Yes No
10. Pressure Tank Size 25 gal. Type galv.
Location
11. Water Sample Submitted? Yes No

REMARKS:

owner instructed to do so.
Permit book = DR DR DE have completed yes

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner James J. Gardner Well No.
Address 10831 W. 187th St. Orland, Pa.
Driller Paul Hasek License No. 102-84
11. Permit No. Date June 14, 1979
12. Water from 13. County Cook
at depth 50 to 240 ft. Sec. 30 Twp. 36N
14. Screen: Diam. in. Rge. 13E
Length: ft. Slot Elev.

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)	SHOW LOCATION IN SECTION PLAT
5"	Steel	0	115	SE SE SW

16. Size Hole below casing: 5 in.
17. Static level 50 ft. below casing top which is ft. above ground level. Pumping level 80 ft. when pumping at 7 gpm for 4 hours.

FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	0	80
Sand, Gravel	80	115
Rock	115	240

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED DATE 6/25/79

White Copy - Ill. Dept. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

FILL IN ALL PERTINENT INFORMATION REQUIRED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
- a. Dug . Bored . Hole Diam. in. Depth ft.
 - b. Curb material . Burled Slab: Yes No
 - c. Driven . Drive Pipe Diam. in. Depth ft.
 - d. Drilled . Finished in Drift . In Rock
 - e. Tubular . Gravel Packed
 - f. Grout:

(KIND)	FROM (FT.)	TO (FT.)

2. Distance to Nearest:
- Building 30 Ft.
 - Cess Pool
 - Privy
 - Septic Tank 80
 - Leaching Pit
 - Well furnishes water for human consumption? Yes No
 - Date well completed 6/24/77
 - Permanent Pump Installed? Yes No
 - Manufacturer Type Location
 - Capacity gpm. Depth of Setting 120 Ft.
 - Well Top Sealed? Yes No Type
 - Pitless Adapter Installed? Yes No
 - Manufacturer Model Number
 - How attached to casing?
 - Well Disinfected? Yes No
 - Pump and Equipment Disinfected? Yes No
 - Pressure Tank Size gal. Type
 - Location
 - Water Sample Submitted? Yes No

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner LARRY BART Well No.
Address 125 W. 110 Ave
Driller FORN & SONS License No. 1022-66
Permit No. 61200 Date 6/24/77
11. Water from Rock 13. County COOS
at depth 25 to 185 ft.
14. Screen: Diam. in. Length: ft. Slot Elev.

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)	SHOW LOCATION IN SECTION PLAT
5	A-53 GALV	0	20	NOTS. ALPINE FARMS
				Subd. W-44-56
				SE SW SW

16. Size Hole below casing: 5 in.
17. Static level 5 ft. below casing top which is ft. above ground level. Pumping level 20 ft. when pumping at gpm for 3 hours.

18. FORMATIONS PASSED THROUGH

THICKNESS	DEPTH OF BOTTOM
BLACK DIRT	5
BLUE CLAY	20
GRAVEL	10
BLACK CLAY	35
GRAVEL	5
LIMESTONE	110
	185

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Larry Bart DATE 6/24/77

White Copy -
Ill. Dept. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

INSTRUCTIONS TO DRILLERS

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ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug 5 ft. Bored 5 in. Hole Diam. 5 in. Depth 380 ft.
Curb material . Burled Slab: Yes No
b. Driven . Drive Pipe Diam. in. Depth ft.
c. Drilled X. Finished in Drift . In Rock X.
Tubular . Gravel Packed .
d. Grout:

(KIND)	FROM (FT.)	TO (FT.)
<u>Cuttings</u>		

2. Distance to Nearest:

- Building Ft. Seepage Tile Field 25
Cess Pool Sewer (non Cast Iron)
Privy Sewer (Cast Iron)
Septic Tank 30 Barnyard
Leaching Pit Manure Pile
3. Well furnishes water for human consumption? Yes X No
4. Date well completed 10-7-81
5. Permanent Pump Installed? Yes Date No

- Manufacturer Type Location
Capacity gpm. Depth of Setting Ft.
6. Well Top Sealed? Yes No Type
7. Pitless Adapter Installed? Yes No
Manufacturer Model Number
How attached to casing?
8. Well Disinfected? Yes No
9. Pump and Equipment Disinfected? Yes No
10. Pressure Tank Size gal. Type
Location

11. Water Sample Submitted? Yes No X
REMARKS:

owner instructed to do so

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner: Gray Bicknell Well No.
Address 12300 S. 104th Ave Taylor Park
Driller Bob Ferguson License No. 1102-84
11. Permit No. 10659 Date 10-7-81
12. Water from Rock 13. County Clark
at depth to ft. Sec. 29
14. Screen: Diam. in. Twp. 34N
Length: ft. Slot Rge. 14E
Elev.

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (ft.)	To (ft.)
<u>5</u>	<u>Black 15 lb</u>	<u>0</u>	<u>90</u>

SHOW LOCATION IN SECTION PLAT
NW 1/4 34N 14E 29

16. Size Hole below casing: 4 3/8 in.
17. Static level ft. below casing top which is ft.
above ground level. Pumping level ft. when pumping at gpm for hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
<u>Sand</u>	<u>0</u>	<u>4</u>
<u>Clay</u>	<u>4</u>	<u>30</u>
<u>Gravel</u>	<u>30</u>	<u>90</u>
<u>Rock</u>	<u>90</u>	<u>280</u>

(CONTINUE ON SEPARATE SHEET IF NECESSARY)
SIGNED Phil Morrison DATE 10/9/81

INSTRUCTIONS TO DRILLERS

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White Copy -
Ill. Dep. of Public Health
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Blue Copy - Well Owner

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

- Type of Well
 - Dug 5 in. Hole Diam. 5 in. Depth 200 ft.
Curb material . Buried Slab: Yes No X
 - Driven . Drive Pipe Diam. 5 in. Depth 117 ft.
c. Drilled X. Finished in Drift . In Rock X.
Tubular . Gravel Packed .
 - Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
- Distance to Nearest:

Building <u>44</u> Ft.	Seepage Tile Field <u>95</u>
Cess Pool <u> </u>	Sewer (non Cast iron) <u> </u>
Privy <u> </u>	Sewer (Cast iron) <u>56</u>
Septic Tank <u>89</u>	Barnyard <u> </u>
Leaching Pit <u> </u>	Manure Pile <u> </u>
- Well furnishes water for human consumption? Yes X No
- Date well completed 9/23/80
- Permanent Pump Installed? Yes X No Date 9/24/80 No 11
Manufacturer Sta-Rite Type Sub Location
Capacity 11 gpm. Depth of Setting 100 Ft.
- Well Top Sealed? Yes X No Type Water tight cap.
Pitless Adapter Installed? Yes X No
- Manufacturer Baker Monitor Model Number Snappy
How attached to casing? Clamp on type
- Well Disinfected? Yes X No
- Pump and Equipment Disinfected? Yes X No
- Pressure Tank Size 42 gal. Type Conventional
Location Basement
- Water Sample Submitted? Yes No X

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

- Property owner ANDREW MACK Well No. 1
Address 179th & 104th Ave. Orland Park, Illinois
Driller J.R. SPINNETT License No. 102-106
11. Permit No. 96142 Date 9/16/80
12. Water from Limestone 13. County COOK
at depth 117 to 200 ft.
14. Screen: Diam. in. Sec. 29
Length: ft. Slot Twp. 36N
Rge. 12E Elev.
- Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	Steel 15#	0	117
- Size Hole below casing: 5 in.
- Static level 65 ft. below casing top which is 8" ft. above ground level. Pumping level 65 ft. when pumping at 200 gpm for 2 hours.

SHOW LOCATION IN SECTION PLAT
NW NE SE

FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Black dirt top soil	2	2
Generally clay with small rock	79	81
Mostly gravel with some sand	33	114
Gravel and lots of sand	3	117
Limestone		200

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED J.R. Spinnett DATE Dec. 23, 1980

White Copy -
Ill. Dept. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

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ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

GEOLOGICAL AND WATER SURVEYS WELL RECORD

1. Type of Well

- a. Dug 20 ft. Bored 20 ft. Hole Diam. 12 in. Depth 20 ft.
Curb material concrete. Buried Slab: Yes No
b. Driven 20 ft. Drive Pipe Diam. 12 in. Depth 20 ft.
c. Drilled X. Finished in Drift 20 ft. In Rock X.
Tubular 20 ft. Gravel Packed 20 ft.

d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

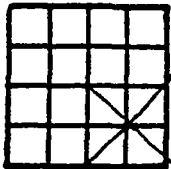
- Building 20 ft. Sewage Tile Field 75 ft.
Cess Pool 20 ft. Sewer (non Cast Iron) 20 ft.
Privy 20 ft. Sewer (Cast Iron) 20 ft.
Septic Tank 20 ft. Barnyard 20 ft.
Leaching Pit 20 ft. Manure Pile 20 ft.

3. Well furnishes water for human consumption? Yes No
4. Date well completed 12-5-86
5. Permanent Pump Installed? Yes X Date 12-15-86 No No
Manufacturer Wells Type Submersible Location 80 ft.
Capacity 12 gpm Depth of Setting 80 ft.
6. Well Top Sealed? Yes X No No Type None
7. Pitless Adapter Installed? Yes X No No Model Number None
Manufacturer Wells How attached to casing? Mechanical
8. Well Disinfected? Yes X No No
9. Pump and Equipment Disinfected? Yes X No No
10. Pressure Tank Size 40 gal. Type WXR202
Location Basement
11. Water Sample Submitted? Yes No No X

REMARKS:

Co # 27522

10. Property owner Jeff Richards Well No. 19326 S. Wolf Rd., Mokena, IL
Address 19326 S. Wolf Rd., Mokena, IL
Driller Frank Sharpe License No. 102-177
11. Permit No. 126416 Date 8/27/86
12. Water from Limestone 13. County COOK
at depth 80 to 110 ft.
14. Screen: Diam. 12 in. Sec. 29
Length: 12 ft. Slot 12 in. Twp. 36N
Elev. 12E



Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	ASTM A53 B	0	81

SHOW LOCATION IN SECTION PLAT

Plot 14, Alpine Farms SW

16. Size Hole below casing: 4 3/4 in.
17. Static level 4 3/4 ft. below casing top which is 4 3/4 ft. above ground level. Pumping level 4 3/4 ft. when pumping at 4 3/4 gpm for 4 3/4 hours.

18.	FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
	Clay	8	8
	Sand	12	20
	Clay	53	73
	Broken Limestone	7	80
	Limestone	100	180

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Frank Sharpe DATE 12-20-86